24 June 2005

from MMS SMART Proposal – p. 37 – per spacecraft numbers/page E-17 of CSR
in all modes listed below, IDPU outputs to CIDP at burst rate

Dual Electron Spectrometer (DES) Survey Modes			
	Slow Survey	Fast Survey	Burst
time/day in mode	14.4 hours (60%)	9.6 hours (40%)	173 seconds (0.2%)
angular resolution (spacecraft)	22.5 deg x 11.3 deg	11.3 deg x 11.3 deg	11.3 deg x 11.3 deg
active heads	1	4	4
total angular pixels	256	512	512
post-polar angle collapse pixels	128	256	256
energies	32	32	32
total transmitted elements	4,096	8,192	8,192
cadence (s)	64.0	4.0	0.025
sampling period (s)	64.0	0.025	0.025
word length (bits)	8	8	4 (see note below)
data rate to s/c if uncompressed	8 bits/elem*4,096 elem/64s = **0.512 kbits/s**	8 bits/elem*8,192 elem/4.0s = **16.4 kbits/s**	4 bits/elem*8,192 elem/0.025s = **1311 kbits/s**
telemetry allocation	0.128 kbits/s	4.10 kbits/s	700 kbits/s
compression factor	4.0	4.0	1.9
ASPOC cadence (s)	1.0	0.063	0.008

Stepping Behavior

-The 25 ms sampling period will lengthen for the nightside data which goes up to the maximum ESA energy.
-The desired approach to scanning will be to hold fixed the look direction and then cycle through energy steps providing a crude spatial but complete energy distribution every 6 milliseconds. This is necessary because the 25 ms cadence is marginal for the magnetopause.

Burst Quality Index

Notes on Burst Quality Index (BQI): We will evaluate the BQI in 4 second blocks of 25 millisecond data and hold a total of 8 seconds of data in the buffer. Changes in BQI between the two 4 second blocks in the buffer exceeding some TBD (presumably programmable) difference will result in the lower of the two BQIs being raised to that of the higher of the two.